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## A New Subgenus and Species of *Cymatium* (Mollusca, Gastropoda)

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### INTRODUCTION

In the process of rearranging the Cymatiidae in the collection of the American Museum of Natural History, we encountered specimens of a large cymatid from Ceylon that could not be referred with certainty to any of the known species of *Cymatium* from the modern Indo-Pacific region. Although the Ceylonese form superficially resembles *Cymatium lotorum* (Linné), a well-known species of the Indo-Pacific fauna, and has in fact been referred to this species in the past, we believe that it is sufficiently different to warrant specific recognition. Therefore, we propose the name *Cymatium perryi* for the Ceylonese form, in honor of George Perry, author of "Conchology, or the natural history of shells" (1811), who may have named it. A new subgenus, *Lotoria*, is proposed for *Cymatium perryi*, new species, and *Cymatium lotorum* (Linné).

We are indebted to Dr. R. Tucker Abbott of the Academy of Natural Sciences of Philadelphia and to Dr. Harald A. Rehder of the United States National Museum for the loan of pertinent material from the collections in their care. Mr. Anthony D'Attilio of New York City also kindly provided specimens on loan from his personal collection.

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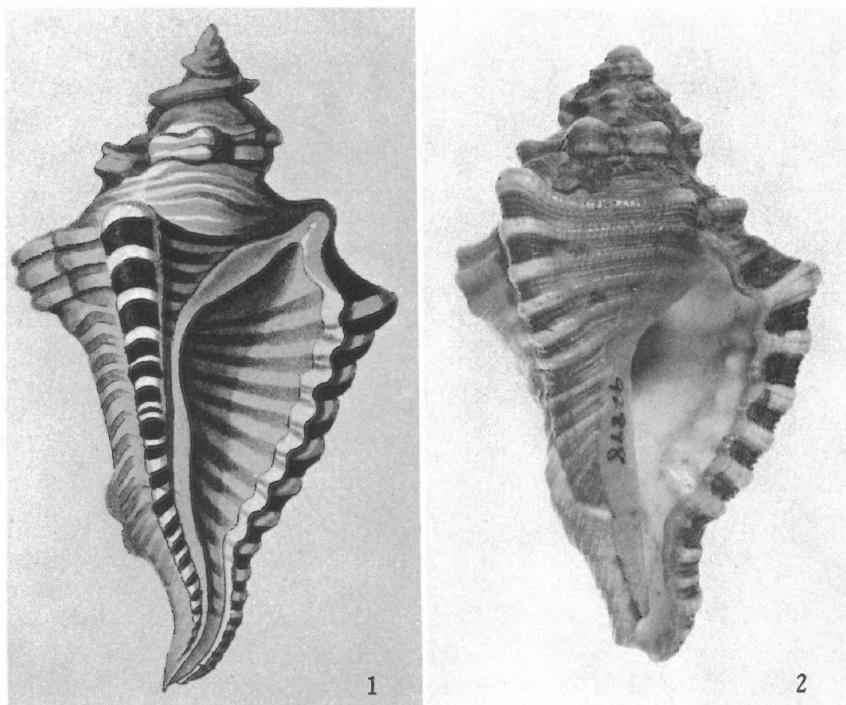


FIG. 1. *Septa triangularis* Perry, 1811; a copy of Perry's original figure, "Southern Ocean."  $\times 1$ .

FIG. 2. *Cymatium (Lotoria) perryi*, new species; a beach specimen from near Trincomalee, Ceylon (A.M.N.H. No. 92898, paratype).  $\times 1$ .

The following abbreviations are used to indicate collections of institutions:

A.M.N.H., the American Museum of Natural History

A.N.S.P., Academy of Natural Sciences of Philadelphia

U.S.N.M., United States National Museum

#### DISCUSSION

Perry (1811, pl. 14, fig. 6) proposed the name *Septa triangularis* for a cymatid from the "Southern Ocean." His description is brief and largely non-diagnostic: "Shell reddish brown, variegated with white and dark brown marks; its singularly angulated form, and particularly its angular cheek, will easily distinguish it from the rest of its congeners." This suggests *Cymatium lotorium* (Linné). However, the colored figure, which is

crudely executed, may represent a composite drawing of *Cymatium femorale* (Linné) and either *Cymatium lotorium* (Linné) or possibly the Ceylonese form that we have described below as a new species. Adam and Leloup (1938) considered the figure to represent *Cymatium lotorium* (Linné), but Dodge (1957) believed it to be clearly recognizable as *Cymatium femorale* (Linné). Dodge (1957) further stated that the description refers unmistakably to *Cymatium femorale* (Linné). Clench and Turner (1957) also referred Perry's species to the synonymy of *Cymatium femorale* (Linné).

A copy of Perry's figure is shown herein, and his figure is compared with a photograph of *Cymatium perryi*, new species (see fig. 1). Although Perry may have had the Ceylonese species, it seems more likely that his illustration represents a specimen of *Cymatium femorale* (Linné) with a juvenile lip. Therefore, in the absence of the type specimen, we consider *Septa triangularis* Perry to be a *species inquirendae*, and we have elected to propose the Ceylonese form as a new species.

In passing, it is interesting to note that Perry's work was largely ignored by his British contemporaries. For example, G. B. Sowerby, I (1829), considered Perry to be, among other things, "an author of absurdities," and accused him of "glaring plagiarism." In a footnote to Sowerby's critique, the editor concurred with his remarks, calling Perry "an ignorant pretender," and concluded that "It is our unanimous opinion that Perry's Conchology is not a work worthy of being cited as authority." Nevertheless, Perry's illustrations, poorly executed as they may be, are certainly no worse than those in some recently issued works that are offered as scientific endeavors.

## SYSTEMATIC DESCRIPTIONS

### GENUS *CYMATIUM* RÖDING, 1798

*Cymatium* RÖDING, 1798, Museum Boltenianum, pars secunda continens conchyliia, p. 129. Type species, *Murex femorale* Linné [= *Cymatium femorale* (Linné), 1758], by subsequent designation of Dall (1904, p. 133).

*Lotorium* MONTFORT, 1810, Conchyliologie systématique et classification méthodique des coquilles, vol. 2, p. 582. Type species, *Lotorium lotor* Montfort, 1810 [= *Murex femorale* Linné, 1758], by monotypy. Not *Lotorium* Pusch, 1837.

*Trito currus* [sic] *amphytridis* LESSON, 1842, L'Echo du Monde Savant, ser. 2, vol. 9, no. 3, col. 65; for *Tritocurrus amphytridis* Lesson, new species, *Triton femorale* [= *Cymatium femorale* (Linné), 1758], and *Triton lotorium* [= *Cymatium lotorium* (Linné), 1758]. Type species here designated: *Tritocurrus amphytridis* Lesson, 1842 [= *Cymatium tigrinum* (Broderip), 1833]. SHERBORN, 1931, Index animalium, sectio secunda, p. 6636. NEAVE, 1950, Nomenclator zoologicus, vol. 5, p. 279, as *Tritocurrus*.

*Luterium* HERRMANNSEN, 1847, *Indicis generum malacozoorum primordia*, vol. 1, p. 632; emendation of *Lotorium* Montfort, 1810.

*Currus* "Lesson," DALL, 1904, *Smithsonian Misc. Coll.*, vol. 47, p. 139. Type species, *Triton tigrinus* Broderip, 1833, by monotypy. CLENCH AND TURNER, 1957, *Johnsonia*, vol. 3, p. 197.

**REMARKS:** Although some students have raised a number of the more closely allied species groups of *Cymatium* (*sensu lato*) to generic rank, we prefer to recognize the species groups on the subgeneric level, as considerable overlapping occurs between many of these groups (see Clench and Turner, 1957). In considering the modern representatives of the genus, we would limit the nominotypical subgenus to include, in addition to the type species, two other species, namely, *Cymatium ranzanii* (Bianconi, 1850)<sup>1</sup> and *Cymatium tigrinum* (Broderip, 1833), and we place *Cymatium lotorium* (Linné, 1758) and *Cymatium perryi*, new species, in *Lotoria*, new subgenus.

#### SUBGENUS **LOTORIA**, NEW SUBGENUS

**DIAGNOSIS:** Shell characters similar to those of *Cymatium* (*sensu stricto*), but with siphonal canal considerably distorted, and similar to those of *Ranularia*, but less pyriform in shape and with heavier nodules. Varices prominent, colored brown and white.

**TYPE SPECIES:** *Cymatium* (*Lotoria*) *perryi*, new species.

**REMARKS:** *Cymatium lotorium* has, in recent years, generally been referred to either *Cymatium* (*sensu stricto*) or *Ranularia*, often questionably. The heavy, distorted, highly colored shells of *Cymatium lotorium* and the Ceylonese species described below actually fall between *Cymatium* (*sensu stricto*) and *Ranularia* Schumacher, 1817 (type species: *Ranularia longirostra* Schumacher, 1817).

We have deliberately designated *Cymatium perryi*, new species, the type of this subgenus owing to the uncertain nomenclatural status of *Murex lotorium* Linné (see Remarks under the following species).

#### *Cymatium* (*Lotoria*) *lоторium* (Linné), 1758

Figures 3, 5

- RUMPHIUS, 1705, *D'Amboinsche Rariteitkamer*, pl. 26, fig. B.
- PETIVER, 1713, *Aquatilium animalium Amboinae*, pl. 12, fig. 3.

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<sup>1</sup> A little-known species that was originally described from Mozambique, Portuguese East Africa, and recently was recorded from Périm Island, Aden, Arabia (Bellentante, 1954) and from the Somalia Republic; Muscat, Oman, Arabia; and Karachi, Pakistan (Emerson and D'Attilio, 1962); Dubai, Oman, Arabia (Haas, 1954).

— d'ARGENVILLE, 1742, L'histoire naturelle éclaircie . . . et la conchyliologie, pl. 13, fig. B.

— REGENFUSS, 1758, Auserlesne Schnecken, Muscheln und andre Schaalthiere, pl. 2, fig. 21.

— KNORR, 1772, Vergnügen der Augen und des Gemüths in Vorstellung einer allgemeinen Sammlung von Schnecken und Muscheln, pl. 26, fig. 2.

— FAVANNE, 1780, La conchyliologie, ou histoire naturelle des coquilles, pl. 34, fig. A3.

*Murex lotorium* LINNÉ, 1758, Systema naturae per regna tria naturae . . . editio decima, reformata, vol. 1, p. 7; refers to d'Argenville, 1742, pl. 13, fig. "M?" [According to Dodge (1957, p. 114) Linné subsequently changed the figure citation to figure B in his corrected manuscript of the twelfth edition of "Systema naturae"].

*Cymatium rhinoceros* RÖDING, 1798, Museum Boltenianum, pars secunda continens conchyliia, p. 129, in part, reference to Knorr only; refers to *Murex pyrum*, sp. 33 of Gmelin (1791) and to Knorr (1772, pl. 26, fig. 2).

*Triton distortum* LAMARCK, 1816, Tableau encyclopédique et méthodique des trois règnes de la nature, pl. 415, fig. 3; Liste, p. 4.

*Triton lotorium* Linné, LAMARCK, 1822, Histoire naturelle des animaux sans vertèbres, vol. 7, p. 182; refers to figures of Rumphius (1705), d'Argenville (1742), Petiver (1713), Favanne (1780), Knorr (1772), Regenfuss (1758), and to *Triton distortum* Lamarck (1816).

*Triton lotorium* Linné, REEVE, 1844, Conchologia iconica: or, illustrations of the shells of molluscous animals, vol. 2, Monograph of the genus Triton, pl. 6, fig. "19b" [19a]. KÜSTER AND KOBELT, 1878, Systematisches Conchylien-Cabinet, vol. 3, pt. 2, pl. 10, fig. 3, pl. 52, fig. 4 var., in part, excluding reference to pl. 53, fig. 4 var. KAICHER, 1956, Indo-Pacific sea shells, Tonnacea, pl. 2, fig. 10.

*Cymatium (Cymatium) lotorium* Linné, TRYON, 1880, in Tryon and Pilsbry, Manual of conchology, ser. 1, vol. 3, p. 19, pl. 11, figs. 78, 79, pl. 10, fig. 76, in part, excluding references to pl. 11, fig. 78, and pl. 10, fig. 76.

*Cymatium (Ranularia) lotorium* Linné, KIRA, 1955, Coloured illustrations of the shells of Japan, p. 43, pl. 21, fig. 16.

**REMARKS:** Although *Cymatium lotorium* of authors is now generally considered to be *Murex lotorium* of Linné, there was at one time considerable difference of opinion considering the identity of this species. Dodge (1957) has outlined the complicated nomenclatural history of this taxon.

Briefly, the confusion centered on the lack of an adequate original description and on a queried reference to the sole figure cited by Linné (1758). These circumstances led to the application of the name by various students of the eighteenth to middle nineteenth centuries to such diverse forms as *Murex lampus*, *M. olearium*, *M. pileare*, and *M. pyrum*.

Unfortunately the only citation to a figure given by Linné (1758) for *Murex lotorium* was figure "M?" of plate 13 of d'Argenville (1742); this figure appears to be a crude drawing of what is now considered to be *Cymatium pileare* (Linné). However, in the twelfth edition of "Systema naturae," Linné (1767) again questioned d'Argenville's figure and added,

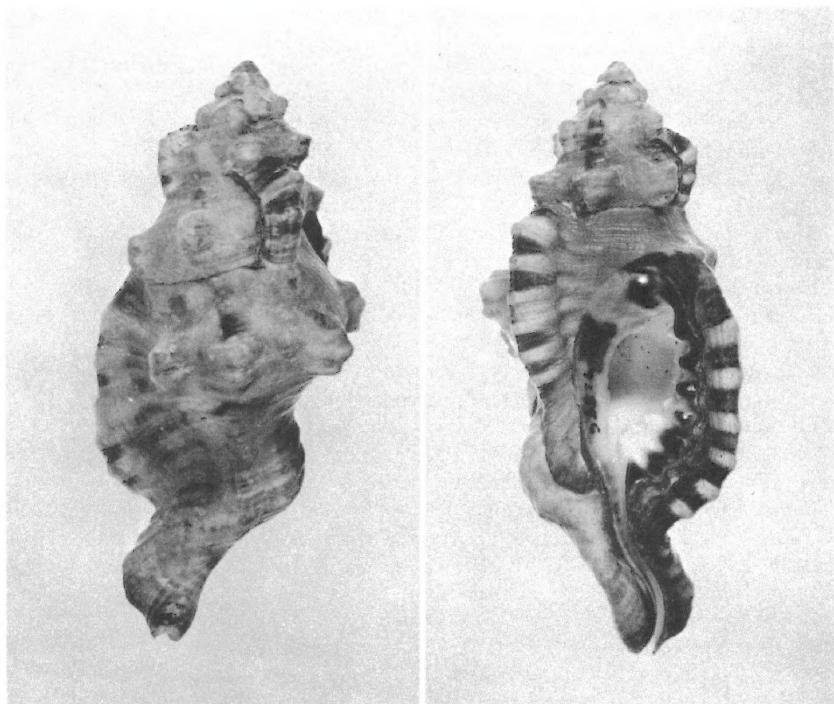


FIG. 3. *Cymatium (Lotoria) lotorium* (Linné), 1758; a mature specimen from Siasi, Sulu, Philippines (A.M.N.H. No. 92896, ex P. de Mesa collection). *Left:* Dorsal view. *Right:* Apertural view.  $\times \frac{3}{4}$ .

with a query, figure B, plate 26, of Rumphius (1705) to his references for *Murex lotorium*. Rumphius' figure appears to represent the dorsum of the present species. Moreover, as Dodge (1957, p. 114) pointed out, Linné, in his corrected manuscript of the twelfth edition, substituted d'Argenville's figure B of plate 13 for figure M of the same plate and deleted the query after this and his reference to Rumphius. Dodge further states that Linné, in the same manuscript, deleted these figures from the synonymy of *Murex femorale*, the taxon which immediately precedes *Murex lotorium* in the tenth and twelfth editions of "Systema naturae."

Although Linné's corrected manuscript was never published and thus has no nomenclatural standing, his intended concept for *lotorium* would seem to be unequivocal. Therefore, the application of the First Reviser Rule, as provided in the present Code, would be inappropriate. Actually, Lamarck (1822) was the first author adequately to redescribe and to provide a discernible synonymy of this species. To credit as the "first

reviser" any of a host of the early, post-Linnean workers who unconvincingly debated the identity of *lotorium* would be presumptuous under these circumstances.

This species is recorded to range throughout the Indo-Pacific faunal province and is cited from the Red Sea. We have not, however, been able to verify any records from Ceylon, the southwest coast of India, or Burma.

### **Cymatium (Lotoria) perryi, new species**

Figures 2, 4, 6

[?] *Septa triangularis* PERRY, 1811, Conchology, or the natural history of shells, pl. 14, fig. 6.

*Triton lotorium* Lamarck, REEVE, 1842, Conchologia systematica, or complete system of conchology, vol. 2, p. 198, pl. 244, fig. 1, in part, reference to fig. only. Not Lamarck, 1822, nor Linné, 1758.

*Triton lotorium* variety  $\beta$  REEVE, 1844, Conchologia iconica: or, illustrations of the shells of molluscous animals, vol. 2, Monograph of the genus Triton, pl. 6, fig. "19a" [19b].

*Triton lotorium* Linné, KÜSTER AND KOBELT, 1878, Systematisches Conchylien-Cabinet, vol. 3, pt. 2, p. 182, pl. 10, fig. 3, pl. 52, fig. 4 var., in part, reference to pl. 53, fig. 4 only. Not Linné, 1758.

*Cymatium (Cymatium) lotorium* Linné, TRYON, 1880, in Tryon and Pilsbry, Manual of conchology, ser. 1, vol. 3, p. 19, pl. 11, figs. 78, 79, pl. 10, fig. 76, in part, reference to pl. 11, fig. 78 only [a copy of Reeve, 1844, pl. 6, fig. 19a]. Not Linné, 1758.

*Cymatium rhinoceros* Röding, GRAVELY, 1942, Bull. Madras Govt. Mus., new ser., nat. hist. sect., vol. 5, pp. 44, 97, fig. 7d. Not Röding, 1798.

*Cymatium (Ranularia) grandimaculatum pyrum* Linné, SMITH, 1948, Triton helmet and harp shells, synonymy, nomenclature, range and illustrations, p. 5, pl. 2, fig. 14, in part, reference to fig. 14 only. Not Linné, 1758.

**DIAGNOSIS:** Shell similar to that of *Cymatium lotorium* (Linné), but more triangular, proportionately shorter, and distinctively colored with a rich, reddish brown band that encircles the edge of the aperture and appears in the siphonal canal.

**DESCRIPTION:** Shell heavy, compact, and of medium size (42 to 125 mm.), with five to seven whorls. Spire short and cancellated; apical whorls missing on material examined. Body whorl ornamented with three strong axial nodules that are crossed by three spiral cords, of which the uppermost is more produced. Dorsum of body whorl crossed by six raised, white ribs. Varices white, colored with well-defined, rich brown interstriae. Siphonal canal twisted, deep, and ornamented with raised spiral cords, of which one or more are prominently developed. Aperture

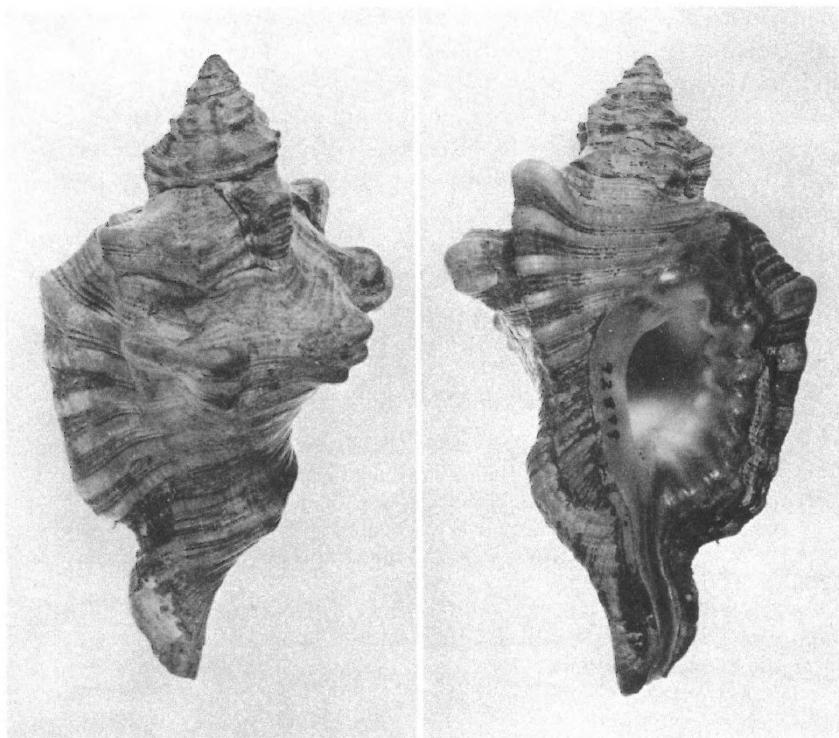


FIG. 4. *Cymatium (Lotoria) perryi*, new species; a mature specimen from southwest Ceylon (A.M.N.H. No. 92899, holotype). *Left*: Dorsal view. *Right*: Apertural view.  $\times \frac{3}{4}$ .

subcircular; outer lip strongly thickened when fully developed; varix present. Inner edge of outer lip possessing six or seven denticles, which are produced well back into aperture. Columella twisted and possessing two blunt denticles. Parietal wall heavily glazed. Parietal wall, outer lip, and canal edged with dark red-brown in fresh specimens, but this coloration may fade to orange or pale ochraceous brown in dead or old specimens. Operculum unguiculate-shaped, with a marginal nucleus and numerous concentric growth lines. Periostracum thin and olivaceous brown to brassy brown in color.

REMARKS: This species was figured by Reeve (1842, pl. 244, fig. 1; 1844, pl. 6, fig. 19a) and by Küster and Kobelt (1878, pl. 53, fig. 4 var.) under the name *Triton lotorium* (Linné) or as a variety of *T. lotorium*. Tryon (1880-[1881], pl. 11, fig. 78) used a reproduction of Reeve's figure (1844, pl. 6, fig. 19a) for one of his illustrations of *Cymatium lotorium*.

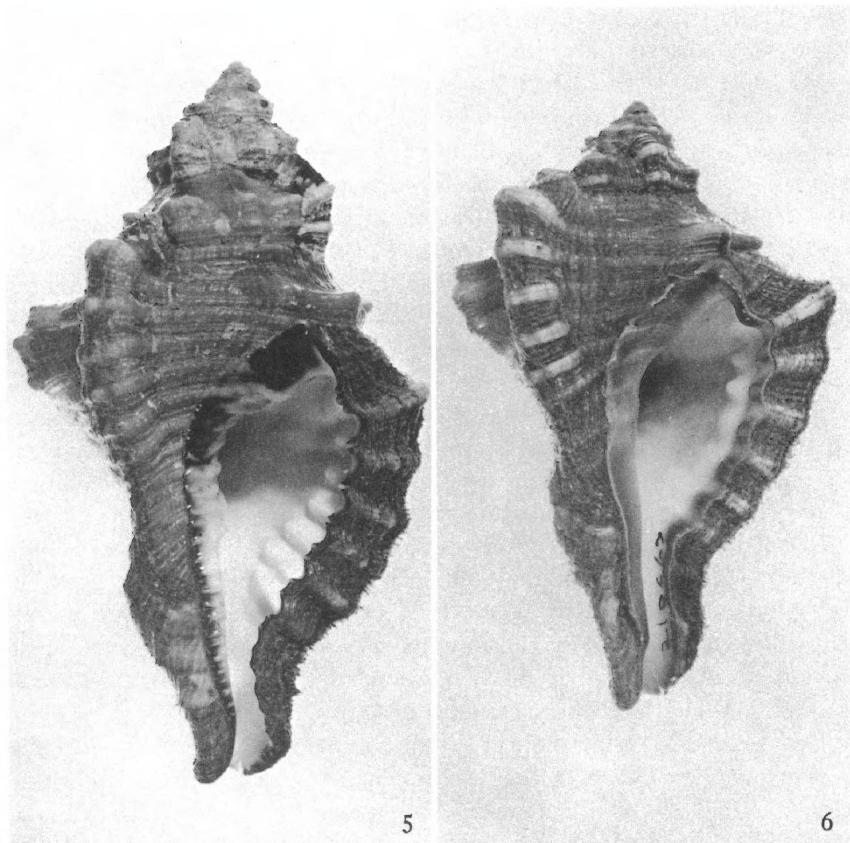


FIG. 5. *Cymatium (Lotoria) lotorium* (Linné), 1758; a fresh, immature specimen from Maeda, Okinawa, Ryukyu Islands (A.M.N.H. No. 92897, ex W. A. McCarty collection).  $\times 1$ .

FIG. 6. *Cymatium (Lotoria) perryi*, new species; a fresh, small specimen from near Colombo Harbor, Ceylon (A.N.S.P. No. 210667, paratype).  $\times 1$ .

(Linné). Smith (1948, p. 5, pl. 2, fig. 14) also figured this species, but referred it to "*Cymatium (R.[anularia]) grandimaculatum pyrum* L.[inné]."

A schematic line drawing, which apparently represents this species, was given by Gravely (1942) in his list of species from Madras Beach, India.

Compared to *Cymatium lotorium*, the present species is more compact, shorter, and more squat. The rich red-brown color that lines the inner edge of the aperture and siphonal canal renders this species readily distinguishable from *C. lotorium*, which is characterized by two conspicuous

brownish black spots on the columella and by a brownish black edging of the siphonal canal.

*Cymatium perryi* has a shell less highly colored than that of *C. lotorium*, which ranges from straw yellow to deep orange. In the present species, the varices are white, with rich brown interstitial spaces. In *C. lotorium*, this coloring is often poorly developed, especially between the median pair of knobs on the varices. The six raised, white cords on the body whorl of *C. perryi* are rarely present in *C. lotorium*, which has a smoother, less strongly sculptured shell than does the present species. Consequently, the intervarical rest periods or axial ribs upon which the axial blades of periostracal hairs form stand out more prominently in juvenile and adult specimens of *C. lotorium*.

Finally, in *C. lotorium* the brown-edged or brown-black-edged columellar side of the siphonal canal is crossed by raised, white plicae. These are commonly present in adults as well as juveniles. In the heavily calloused *C. perryi*, however, these plicae are visible only in juveniles or are wanting.

**MATERIAL EXAMINED:** Holotype, Ceylon (A.M.N.H. No. 92899; Rodney Jonklass, collector, 1953). Paratypes: Twelve miles north of Trincomalee, Ceylon (A.M.N.H. No. 92898, E. H. Taylor, collector, collected during World War II), one juvenile specimen; pearl beds, north Ceylon (A.N.S.P. No. 209812, *ex* Anne Cadwalader collection), one specimen; Wellawatta, 3 miles south of Colombo Harbor (A.N.S.P. No. 210667, G. and M. Kline, collectors), one adult specimen and one juvenile specimen, taken alive. Other specimens: "Ceylon" (A.M.N.H. No. 24832, *ex* D. J. Steward collection), one specimen; "Ceylon" (A.M.N.H. No. 100001, *ex* R. L. Stuart collection), one adult specimen and one juvenile specimen; "Ceylon" (A.N.S.P. No. 30087, *ex* T. B. Wilson collection), one specimen; no locality (A.N.S.P. No. 112643, *ex* H. Stokes collection), four juveniles; "Red Sea" (U.S.N.M. No. 16935), one juvenile specimen; no locality (A.N.S.P. No. 36899, *ex* J. S. Phillips collection), one juvenile; "Indo-Pacific" (U.S.N.M. No. 88674, *ex* R. E. C. Stearns collection), one juvenile; Goa, west India (U.S.N.M. No. 443034, J. C. Bridwell, collector), one juvenile specimen; Calcutta, India (U.S.N.M. No. 131074, Chamberlain, collector) one juvenile; "East Indies" (U.S.N.M. No. 16938, United States Exploring Expedition), one juvenile specimen; "Burma" (A.N.S.P. No. 93474, E. B. Williamson, collector), one juvenile specimen.

All the specimens with reliable locality data that we have seen are from Ceylon, with the possible exception of three juvenile specimens (two from India and the third from "Burma").

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